CLAIMS

1. A semiconductor memory device comprising:

a nonvolatile memory that consists of a plurality of sectors, a certain number of continuous sectors of which are grouped as a block of a minimum unit for data erase, and writes or reads data transmitted from an external access device;

a memory controller for controlling erase, writing and reading of data to said nonvolatile memory when a command containing a control signal is input from said access device;

a device information storage part for storing device information concerning physical properties of the semiconductor memory device containing erase block size of said nonvolatile memory; and

a file system interface controller for performing file access processing to said nonvolatile memory on the basis of the device information stored in said device information storage part.

2. The semiconductor memory device according to claim 1, wherein

said file system interface controller manages data stored in said nonvolatile memory as a file and when a

command to request file access processing to a file on said nonvolatile memory is input from said access device, performs file access processing to a file existing in said nonvolatile memory.

3. The semiconductor memory device according to claim 1, wherein

said nonvolatile memory has a first area and a second area,

said file system interface controller manages data stored in said first area as a file and when a command to request file access processing to a file in said first area of said nonvolatile memory is input from said access device, performs file access processing to a file existing in said first area of said nonvolatile memory,

said semiconductor memory device further comprises:

a low-level IO interface controller for performing writing or reading processing of the data to said second area of said nonvolatile memory, when a command to request writing or reading processing of the data to said second area of said nonvolatile memory is input from said access device for controlling file systems.

4. The semiconductor memory device according to claim 1, further comprises:

a low-level IO interface controller for performing writing or reading processing of data to an arbitrary position in said nonvolatile memory, when a command to request writing or reading processing of data to an arbitrary position of said nonvolatile memory is input from said access device for controlling file systems,

wherein said nonvolatile memory has a common area controlled by both of said file system interface controller and said low-level IO interface controller;

said file system interface controller performs only format processing of constructing file system so that an access unit may be an optimum access unit on the basis of device information stored in said device information storage part to the common area on said nonvolatile memory; and

file access processing other than the format processing to a file existing in the common area on said nonvolatile memory is executed by said low-level IO interface controller on the basis of the command input from said access device.

5. The semiconductor memory device according to claim 1, wherein

when a command to request read-only file access processing to a file on said nonvolatile memory is input

from said access device, said file system interface controller performs file access processing to a file existing in said nonvolatile memory,

said semiconductor memory device further comprises:

a low-level IO interface controller for performing writing or reading processing of data at the arbitrary position in said nonvolatile memory, when a command to request writing or reading processing of data at an arbitrary position in the area in said nonvolatile memory that said file system interface controller for data reading is input from said access device that controls the file system; and

a synchronization controller for updating file system management information read in a temporary storage memory in said semiconductor memory device by said file system interface controller so as not to cause inconsistency, when said low-level IO interface controller performs data writing processing to management information of the file system existing in said nonvolatile memory.

6. The semiconductor memory device according to claim 1, wherein

said device information storage part stores information on physical properties of the semiconductor memory device including erase block size of said

nonvolatile memory and device information including a file system type flag representing a type of the file system built on the nonvolatile memory,

said file system interface controller consists of a plurality of file system interface controllers for managing data stored in said nonvolatile memory on the basis of device information stored in said device information storage part and for performing file access processing to a file on the nonvolatile memory according to a command input from said access device, and

said file system interface controller corresponding to said file system type flag among said plurality of file system interface controllers operates on said semiconductor memory device.

7. The semiconductor memory device according to claim 1, wherein

said file system interface controller determines an access unit to optimally access to said nonvolatile memory on the basis of information containing erase block size stored in said device information storage part, and sets the size of a management information area of a file system as a length of multiples of the optimum access unit when performing format processing of building the file system in an area of said nonvolatile memory.

8. The semiconductor memory device according to claim 1, wherein

said file system interface controller determines an optimum access unit to optimally access to said nonvolatile memory on the basis of information containing erase block side stored in said device information storage part, and uses said optimum access unit as an area allocation unit when recording file data to said semiconductor memory device.

9. The semiconductor memory device according to claim 1, wherein

said file system interface controller determines the optimum access unit to optimally access to said nonvolatile memory on the basis of information containing erase block size stored in said device information storage part, and allocates directory areas so that a plurality of directory areas are included in the same said optimum access unit.

10. The semiconductor memory device according to claim 1, wherein

said file system interface controller is composed of a program stored in a memory as a nonvolatile updatable recording medium, and

said file system interface controller can be replaced, updated or deleted from the outside of said semiconductor memory device.

11. A control method of a semiconductor memory device having a nonvolatile memory that consists of a plurality of sectors, and that a certain number of continuous sectors of which are grouped as a block of a minimum unit for data erase, comprising steps of:

storing device information in advance on physical properties of the semiconductor memory device containing erase block size of said nonvolatile memory in a device information storage part;

accepting a command containing a control signal from an external access device;

performing file access processing to said nonvolatile memory on the basis of the device information stored in said device information storage part by the file system interface controller; and

performing erase, writing and reading of data to said nonvolatile memory on the basis of the accepted command.

12. The control method of the semiconductor memory device according to claim 11, comprising steps of:

managing data stored in said nonvolatile memory as a

file by said file system interface controller; and

performing file access processing to a file existing in said nonvolatile memory, when a command to request file access processing to a file on said nonvolatile memory is input from said access device.

13. The control method of the semiconductor memory device according to claim 11, comprising steps of:

determining an access unit to optimally access to said nonvolatile memory on the basis of information containing erase block size stored in said device information storage part by said file system interface controller; and

setting the size of a management information area of a file system as a length of multiples of the optimum access unit when performing format processing of building the file system in an area of said nonvolatile memory.

14. The control method of the semiconductor memory device according to claim 11, comprising steps of:

determining an optimum access unit to optimally access to said nonvolatile memory on the basis of information containing erase block side stored in said device information storage part by said file system interface controller; and

using said optimum access unit as an area allocation unit when recording file data to said semiconductor memory device.

15. The control method of the semiconductor memory device according to claim 11, comprising steps of:

determining the optimum access unit to optimally access to said nonvolatile memory on the basis of information containing erase block size stored in said device information storage part by said file system interface controller; and

allocating directory areas so that a plurality of directory areas are included in the same said optimum access unit.